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BOARD OF EDITORS { Mr. Horace E. Smith, Chief Clerk of Weather Bureau,
Professors Henry A. Hazen, Thomas Russell, and Charles F. Marvin, and
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INTRODUCTION.

This REVIEW is based on reports for February, 1892, from 2,713 regular and voluntary observers. These reports are classified as follows: 158 reports from Weather Bureau stations; 107 reports from United States Army post surgeons; 1,774 monthly reports from state weather service and voluntary observers; 30 reports from Canadian stations; 218 reports through the Cen-

tral Pacific Railway Company; 426 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Service;" monthly reports from local weather services established in all states and territories, except Idaho, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR FEBRUARY, 1892.

The month was warmer than usual, except in the Atlantic coast states south of the 40th parallel. The greatest departure above the normal temperature was reported over the northern plateau region and on the northeast slope of the Rocky Mountains, where it was 5° to 10°, and the most marked departure below the normal temperature was noted on the North Carolina coast, where it was more than 2°. The highest temperature reported by a regular station of the Weather Bureau was 89°, at Brownsville, Tex., on the 11th, and the lowest was -33°, at Saint Vincent, Minn., on the 15th. The principal cold wave of the month advanced from the Northwest to the Atlantic coast from the 13th to 16th. Frost occurred generally over the Florida Peninsula as far south as Jupiter on the 13th. In the Gulf States and Texas frost was not reported south of the 30th parallel.

PRECIPITATION.

The monthly precipitation was generally deficient. On the north Pacific and middle Gulf coasts the amount of rainfall was 4 to 5 inches less than the February average, and in western Oregon, western Washington, over a great part of the Gulf States, Tennessee, and the Florida Peninsula, and along the Atlantic coast north of the 40th parallel the deficiency was more than 2 inches. The monthly precipitation was in excess from southern California and the southern plateau region to the lower Missouri valley, over parts of the Lake region and extreme north-central valleys, and at stations on the Virginia and North Carolina coasts. The greatest excess was noted at Hatteras, N. C., and Leavenworth, Kans., where it was more than 2 inches. At stations in eastern Texas, central Missouri, southeastern Kansas, and western

Colorado the monthly precipitation was the greatest, and on the middle Gulf coast, in northern Arkansas, and at Bandon, Oregon, and Tatoosh Island, Wash., it was the least ever reported for February. An unusual depth of snow was reported in the Adirondack Mountains, New York. In nearly all parts of Iowa the snowfall was insufficient to protect crops, and wheat and other grains were injured. Heavy snow fell in central Arizona and northern New Mexico the early part of the month. A heavy fall of snow occurred generally over New York and New England on the 11th and 12th.

STORMS.

Northerly gales prevailed along the middle Atlantic and North Carolina coasts on the 5th. On the 6th destructive thunderstorms occurred in Missouri and Arkansas. A local storm damaged property to the extent of about \$2,500 in Wood county, Ohio, on the 7th. Gales attended a heavy snow and rain storm over the middle Atlantic and New England states during the 11th and 12th. During a thunderstorm at Palestine, Tex., on the 19th damage was caused by heavy rain.

RIVERS.

Ice in the Saint Clair River broke up the early part of the month. An unusually heavy ice gorge in the Allegheny River at Red Bank broke on the 20th. A channel opened in the ice in the Mississippi River at La Crosse, Wis., on the 26th. At Davenport, Iowa, ice ran out on the 4th. The Missouri River continued frozen at Pierre, S. Dak.

AUROSAS.

Unusually brilliant auroral displays over an exceptionally large region of visibility occurred on the 13th.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for February, 1892, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars.

In February the mean pressure is usually highest over the middle plateau region, where it rises above 30.20 about the Great Salt Lake region in Utah. In districts east of the Mississippi and south of the Ohio rivers it is generally above

30.15. The normal pressure for February is lowest over Newfoundland, where it is below 29.90, and it is below 30.00 over the Gulf of Saint Lawrence, eastern Nova Scotia, and on the Pacific coast north of Washington. There is usually a decrease of mean pressure over the interior and southern districts, and an increase of pressure in the northeast and northwest districts and over the British Possessions.

The distribution of mean pressure in February, 1892, was

peculiar. The pressure was highest from eastern Manitoba over the north Lake Superior region, where it was above 30.20. It was above 30.15 from the central part of the middle plateau region over the middle Missouri valley and the north part of the Lake region, and from the Saint Lawrence Valley southward over the interior of the Atlantic and east Gulf states. The mean pressure was lowest in the lower Colorado valley, where it was below 30.00, and it was below 30.05 on the extreme north Pacific coast, along the middle and south Pacific coasts, over the west and south parts of the southern plateau region, and over eastern Nova Scotia.

The abnormally high pressure over the extreme north-central districts marks the path of six of the ten high pressure areas traced for the month, and five of the nine low areas traced traversed the northeast slope of the Rocky Mountains, where the departure below the normal pressure was most marked.

A comparison of the pressure chart for February, 1892, with that of the preceding month shows a general decrease of pressure, except east of a line traced from the Saskatchewan Valley to the south Atlantic coast. The most marked decrease of pressure occurred over the middle and northern plateau regions, where it was more than .15, and the greatest increase was noted from the eastern Lake Superior region to the middle Saint Lawrence valley, where the mean pressure was more than .15 higher than for January, 1892.

On the Washington coast, and from Manitoba, the Dakotas, and the middle Missouri valley to the Atlantic coast north of the 37th parallel the mean pressure was above the normal; elsewhere it was generally below the normal. The greatest excess in mean pressure was noted over eastern New England and the middle and lower Saint Lawrence valley, and on the extreme north Pacific coast, where it exceeded .10, and the most marked departure below the normal pressure was shown on the northeast slope of the Rocky Mountains, where it was .07 to .13. On the middle and south Pacific coasts and over the south part of the southern plateau region the departure below the normal pressure was more than .05.

HIGH AND LOW AREAS.

The paths of areas of high and low pressure over the United States and Canada during February, 1892, are shown on Charts IV and I, respectively, and some of the prominent characteristics of the areas are given in the table at the end of this chapter.

HIGH AREAS.

Ten high areas appeared, the average number traced for February during the last 17 years being 8. Of the high areas traced 6 appeared in the British Northwest Territory, one off the north Pacific coast, and 3 over the plateau region north of the 40th parallel. The high area that appeared on the north Pacific coast moved southeastward to Colorado, thence northeastward to Lake Superior, and thence to Nova Scotia. The general direction of movement of the high areas was east-southeast, and the average velocity was 27 miles per hour. The highest pressure reported for the month was 31.08, at Father Point, Quebec, at the morning report of the 27th. The following is a description of the high areas traced:

I.—At the opening of the month high area X traced for January occupied the south Atlantic states, low area XI for January was central south of Newfoundland, low area I, a continuation of low area XIII for January, was central over Iowa, and the pressure was high and rising over the northern plateau region and on the northeast slope of the Rocky Mountains. The pressure continued to rise over the middle and northern plateau region and on the eastern slope of the Rocky Mountains until the morning of the 2d, when high area I was central over Kansas, with pressure above 30.30. On this date the temperature fell 10° to 20° from Texas to the Lake region. During the 3d the high area advanced east of the Mississippi River, with pressure above 30.30 in Kentucky and Tennessee, and a temperature fall of 10° to 20° in the Ohio and middle

Mississippi valleys. On the 4th the center passed off the south Atlantic coast, with a temperature fall of 10° to 16° from eastern Tennessee to the Maryland and Virginia coasts.

II.—The morning of the 2d, when high area I was central over Kansas, this high area occupied eastern Washington and eastern Oregon, where the 12-hour increase of pressure was .14 to .16, and pressure above 30.40 was reported. By the morning report of the 3d the area was central over Wyoming, and the temperature had fallen 14° to 18° from western Colorado to eastern Montana. On the 4th the center advanced to the valley of the Red River of the North, with pressure above 30.20, and moved thence to the west lower lake region by the evening of the 5th, with pressure above 30.30. On the 5th the temperature fell 10° to 20° from the southeast slope of the Rocky Mountains over the Lake region, and the 12-hour increase of pressure was .20 to .30 in the Ohio Valley. Moving southeast the area passed off the middle Atlantic coast on the 6th, with pressure above 30.40, temperature below freezing to South Carolina, and the lowest temperature of the month at Albany, N. Y., Washington, D. C., and Lynchburgh, Va., where the minimum was 0° , 6° , and 16° , respectively.

III.—Appeared north of North Dakota the morning of the 6th, with pressure above 30.30. The temperature had fallen 10° to 20° in 24 hours in that region, the line of freezing weather extended to southern New Mexico and western Texas, and the 12-hour decrease of pressure was .20 to .30 in the east Saskatchewan valley and Manitoba. During the 7th this high area disappeared by an increase of pressure north of the Lake region.

IV.—Appeared over Alberta the morning of the 8th, with pressure above 30.30, a 12-hour increase of pressure of more than .30. A 24-hour temperature fall of more than 20° was noted north of Montana, and freezing weather occurred to extreme western Texas. During the 9th the center advanced to the lower Missouri valley and thence to the middle Ohio valley, with pressure falling below 30.20, and freezing weather north of a line traced from central Texas to New York. The morning of the 10th this area occupied the middle Atlantic states, with pressure below 30.20, and passed thence eastward, with slight pressure and temperature changes, and freezing weather to southern Virginia.

V.—Appeared north of Montana the morning of the 11th, with pressure above 30.30. A 12-hour increase of pressure of more than .30 occurred in Assiniboia, a 24-hour temperature fall of 10° to 30° was reported in the Red River of the North and middle and lower Missouri valleys, and freezing weather occurred to the southeast slope of the Rocky Mountains and the Ohio River. During the 12th the area was central north of Lake Superior, with pressure above 30.20. The temperature fell 20° to 30° in the Lake region and Ohio Valley, and freezing weather was noted in the Atlantic coast states to northern South Carolina and northern Georgia. During the 13th and early part of the 14th the area was ill defined, but apparently passed southeastward over New York and disappeared off the south New England coast.

VI.—An area of high pressure extended from the Oregon and northern California coasts over the middle plateau region from the 8th to 11th. The morning of the 12th this area had apparently divided, one part remaining over the middle plateau region, and the other occupying Texas, where the pressure was above 30.30. Moving eastward over the north part of the Gulf of Mexico, with pressure above 30.20, the area disappeared east of Florida during the 13th. The passage of this high area was attended by the lowest temperature of the month in the Gulf and south Atlantic states, freezing temperature being reported as far south as Meridian, Miss., and Savannah, Ga., on the 13th.

VII.—This high area was attended by one of the principal cold waves of the month in central and northern districts. Its approach was shown by reports of the 13th, and the morning of the 14th it was central north of Montana, with pressure above 30.40. During the 13th there was a rapid decrease of

pressure in the Northwest, the temperature fell 30° to 50° over and north of eastern Montana, and the line of freezing weather extended to northern Kansas. During the 14th the center advanced to North Dakota. An increase of pressure of more than .50 in 12 hours was noted in the middle Mississippi valley, the temperature fell 20° to 30° in 24 hours in the middle and northern central valleys, a minimum reading of -24° was recorded at Fort Buford, N. Dak., and the line of freezing weather extended to extreme northern Texas and the Ohio Valley.

Moving slowly south of east the center reached the extreme upper Mississippi valley on the 15th, with pressure above 30.60. In the lower lake region the 24-hour increase of pressure was more than 1.00, the temperature fell 20° to 30° from the middle Mississippi valley to the lower lake region, the line of freezing weather extended from central Texas to the New England coast, and the lowest temperature of the month occurred in the middle and upper Mississippi, middle and lower Missouri, and the Red River of the North valleys, a reading of -33° being noted at Saint Vincent, Minn. On the 16th the center reached Ohio, with pressure above 30.70. The temperature fell 10° to 20° in the Atlantic coast states, and more than 40° in eastern Ontario, the line of freezing weather extended to Tennessee and southern Virginia, and the lowest temperature of the month was noted at a number of stations in the Lake region. During the 17th the center reached eastern Virginia, with a decrease of central pressure, the temperature was below freezing to Augusta, Ga., and the lowest temperature of the month occurred at stations in New England, a minimum of -19° being noted at Northfield, Vt. During the 18th the area settled southward to the south Atlantic coast and passed thence to sea during the 19th, its movement after the 17th being unattended by noteworthy features.

VIII.—Appeared over Alberta the morning of the 16th, with pressure above 30.50, and by the evening of that date had advanced to western Saskatchewan. The 12-hour increase of pressure was more than .30, and the temperature fell more than 30° in the upper Saskatchewan valley during the 16th. On the 17th the center advanced to Manitoba, with pressure above 30.60, the pressure increase was .20 to .30 in 12 hours in the middle Missouri and Red River of the North valleys, the 24-hour temperature fall was more than 30° in the lower valley of the Red River of the North and eastern Montana, and the line of freezing weather extended to southwestern Kansas and central New Mexico. During the 18th the area was central north of Lake Superior, with pressure above 30.60, the temperature fell 20° to 30° from Kansas to the north-central Lake region, and the line of freezing weather extended to southern Kansas and central Missouri. On the 19th the area advanced to New England, with pressure below 30.40, and moved thence over the Gulf of Saint Lawrence, where the pressure continued high until the 25th.

IX.—This was the only high area traced across the continent during the month. It appeared on the north Pacific coast on the 22d, with pressure above 30.30, and a 12-hour increase of pressure of more than .40 was shown on the Washington coast. During the 23d the center advanced to the east part of the middle plateau region, with pressure above 30.40. On this date the temperature fell 8° to 14° over the middle and northern plateau regions, and the minimum temperature fell below freezing over the middle plateau region and on the middle-eastern slope of the Rocky Mountains. On the 24th the center moved to the middle-eastern slope of the Rocky Mountains, with pressure above 30.50, there was an increase of pressure of .20 to .30 from Manitoba to Texas, and the line of freezing weather extended from west-central Texas to Lake Superior.

During the 25th the center advanced to the lower Missouri valley, with pressure falling below 30.40. On the 26th the center shifted position to the region north of the Great Lakes, where the pressure rose above 30.90. On the north shore of Lake Superior the 12-hour increase of pressure was more than

.70, and the 24-hour temperature fall exceeded 30°. During the 27th the area moved to the lower Saint Lawrence valley, with pressure above 31.00, a reading of 31.08 being noted at Father Point, Quebec, at the morning report, an increase of 1.02 in 24 hours. The temperature fell 20° to 30° in New England and the Canadian Maritime Provinces, and a fall of 48° was reported at Father Point. On the 28th the area settled southward over the Gulf of Saint Lawrence, with a decrease of central pressure, and the pressure continued high in the region about Nova Scotia until the close of the month.

X and Xa.—Appeared north of eastern Montana on the 27th, with pressure above 30.40, and at the evening report Xa occupied the northeast part of the middle plateau region, with pressure about 30.30. On this date the increase of pressure was .20 to .40 from the middle plateau region to North Dakota, the temperature fell more than 20° in the Dakotas, and the line of freezing weather extended to southern Nebraska. By the night of the 28th the high areas apparently united and formed an area of high pressure which occupied Manitoba and North Dakota, with pressure about 30.50. On this date the pressure increase was .30 to .40 from the southeast slope of the Rocky Mountains to Manitoba, the temperature fell 20° to 30° in the valley of the Red River of the North, 20° at Omaha, Nebr., and the line of freezing weather extended from west-central Texas to southern Wisconsin. At the evening report of the 29th the area was central north of Lake Superior, with pressure above 30.60. The pressure increased .20 to .40 over the extreme upper Mississippi valley and the upper lake region, the temperature fell 10° to 20° over Lake Superior, and the line of freezing weather extended from northern Texas to northern Lower Michigan.

LOW AREAS.

The average velocity of low areas for January and February, 37 statute miles per hour, is the greatest noted for the year. A principal track of February storms east of the Rocky Mountains is from Montana eastward over the Lake region and middle Saint Lawrence valley to southern Newfoundland and the adjoining ocean, and less frequented paths are traced from the middle-eastern slope of the Rocky Mountains and the west Gulf states to the Lake region, and from the south Atlantic coast to Nova Scotia. An average of about two storms per month advance from the Pacific coast north of the 45th parallel and traverse the United States.

Nine low areas appeared during February, 1892, the average number traced for the corresponding month of the last 17 years being 8. Four of the low areas were first located on the north-east slope of the Rocky Mountains, 3 apparently originated on the southeast slope of the Rocky Mountains, one, a continuation of low area XIII for January, was central over Iowa at the opening of the month, and one advanced from the north Pacific coast to Manitoba. The low areas from the northeast slope of the Rocky Mountains moved southeastward over the central valleys and thence eastward, 3 to the Atlantic coast, and one to the Lake region where it dissipated. Two of the low areas from the Southwest moved eastward to the south Atlantic coast, one passed northeastward and disappeared north of the Saint Lawrence Valley, and one low area, not numbered, advanced east-northeast and dissipated over the Ohio Valley.

The north Pacific coast low area moved north of east to Manitoba, where it disappeared. During the early part of the month the pressure was generally low off the north Pacific coast and rain fell throughout the Pacific coast states and over the west part of the plateau region. On the 8th and 9th a low area of slight energy moved northeastward off the west Gulf coast. During the latter part of the month the pressure was low off the south Atlantic coast under the influence of low area VII and a storm which advanced northeastward from extreme southern Florida, and high north to northeast winds prevailed from Hatteras to Cape Cod. No low pressure areas were traced across the continent during the month. The fol-

lowing is a description of the low areas whose tracks are plotted on Chart I:

I.—Was a continuation of low area XIII for January, and at the a. m. report of the 1st was central over Iowa, with pressure below 29.80, and rain from the middle Missouri valley over the Lake region and upper Ohio valley. By the evening report the low area had advanced to western Wisconsin, with a slight increase of central pressure, the pressure had decreased .22 in 12 hours at Pittsburg, Pa., rain was falling in the Southwest and from the Lake region to the south New England and New Jersey coasts, southerly winds of 30 to 40 miles per hour were reported over the southwest Lake region, and the 24-hour increase in temperature was 10° to 20° from the Ohio Valley over the interior of Virginia and the south Atlantic states.

During the 2d the center moved eastward over the Lake region, with pressure below 29.70, the 12-hour decrease of pressure was .30 to .40 over the east part of the lower lake region, the rain area extended over the Lake region and the Atlantic coast states north of the 40th parallel, with snow in New England and the northeastern Lake region, the wind velocities exceeded 30 miles per hour over the lower lakes, and rising followed by falling temperature was noted from the lower Mississippi valley to the lower lake region. By the morning of the 3d the center had advanced off the New England coast, with pressure below 29.70. This low area gained strength during its passage south of Nova Scotia and Newfoundland, the evening report of the 4th showing pressure 29.42 at Sydney, C. B. I.

II.—Appeared the morning of the 4th over extreme southwestern Kansas, with pressure below 29.90, and passed to southwestern Missouri by the evening report, with pressure below 29.80, rain from the middle and southeast slopes of the Rocky Mountains to the Lake region, and a 12-hour decrease of pressure of .30 to .40 in the middle Mississippi valley. Advancing rapidly eastward the center passed off the North Carolina coast during the afternoon of the 5th, attended by fog in the morning on the east Gulf coast, rain in the east-central districts, and high northerly winds in the evening on the North Carolina coast. The southerly course of this low area was caused by high area II, which occupied the extreme upper Mississippi valley and the Lake region during the 5th.

III.—This low area pursued a normal course from the southeast slope of the Rocky Mountains to eastern Ontario. From 8 a. m. to 8 p. m. of the 4th there was a decrease of pressure of .12 to .14 on the south Pacific coast and over the southwest part of the southern plateau, heavy rain fell on the south California coast, and light rain in southern Arizona. During the 5th heavy rain fell in parts of southern California and Arizona, and at the evening report the 12-hour decrease of pressure was .22 at El Paso, Tex. The morning report of the 6th showed a cyclonic area central over western Texas, which advanced to southern Kansas by 8 p. m., with pressure below 29.60. On this date the 12-hour decrease of pressure was .30 to .40 in the middle Mississippi and lower Missouri valleys, the temperature rose 20° in 24 hours at Cairo, Ill., an area of rain extended from the Gulf to Manitoba and eastward to the 87th meridian, the precipitation assuming the form of snow in the middle and upper Missouri valleys, thunderstorms were reported in Missouri and Arkansas, and a wind velocity of 60 miles per hour from the southwest was recorded at Amarillo, Tex.

The morning of the 7th the area was central over Iowa, with pressure below 29.40, the pressure had decreased .40 to .50 in 12 hours over the southwestern part of the Lake region, and the 24-hour temperature rise was 20° to 30° from the Lake region to the east Gulf and south Atlantic states. At the evening report the storm was central near Saginaw Bay, Lower Michigan, with pressure below 29.50, the 12-hour decrease of pressure exceeded .40 from the lower lakes over New York and western New England, and a decided temperature rise was noted east of the Mississippi River, except in eastern

Tennessee. On this date rain fell generally east of the Mississippi River, snow was reported in the Lake region, high winds, reaching a velocity of 55 miles per hour from the southwest at Chicago, Ill., prevailed over the Lake region, a destructive local storm was reported at Cygnet, Ohio, in the afternoon, and thunderstorms were noted in Lower Michigan and New York. During the 8th the center passed northeast of the Great Lakes beyond the region of observation, with snow in the Lake region, northern New York, and central and northern New England.

IV.—Followed the usual course of low areas from the British Northwest Territory to the upper Mississippi valley and thence eastward to New England. The center passed almost directly north from the east New England coast to the Saint Lawrence Valley, and thence southeastward over the Gulf of Saint Lawrence, with the lowest pressure of the month, 28.48, at Sydney, C. B. I. This low area appeared north of western Montana the morning of the 9th, with pressure 29.30 at Edmonton, and a 12-hour decrease of pressure of more than .60 and a 24-hour temperature rise of more than 20° in Alberta. By the evening report the center had advanced southeastward over Assiniboia, with pressure below 29.40, the 12-hour pressure decrease was more than .50 from Manitoba to South Dakota, and the 24-hour rise in temperature was 20° to 30° in that region.

During the 10th the center advanced to Lower Michigan, with pressure below 29.40, and a 12-hour decrease of pressure of .40 to .50 in the upper Mississippi valley and the southwest part of the Lake region. The morning report showed a 24-hour temperature rise of 30° to 40° in the middle Missouri valley, and snow fell from the middle Missouri valley over the Lake region. Moving eastward the center of disturbance passed off the New England coast the evening of the 10th, with pressure below 29.00. On this date the 12-hour decrease of pressure was .50 to .80 on the middle Atlantic and New England coasts, the 24-hour temperature rise was 10° to 20° over northern New England and in the Canadian Maritime Provinces, east to northeast winds of 50 to 60 miles per hour prevailed along the New England coast in the evening, and heavy snow fell in the middle Atlantic and New England states.

The morning of the 12th the storm was central on the east Maine coast, with pressure 28.62 at Eastport, a decrease of .52 in 12 hours, and by the evening report the center had changed position to the lower Saint Lawrence valley with lowest pressure, 29.08, at Father Point, Quebec. On this date a decided fall in temperature occurred in the Atlantic coast states, with high northwest winds at coast stations from Florida northward. The morning of the 13th the center was located east of Cape Breton Island, with pressure 28.48 at Sydney, a decrease of .84 in 12 hours. In the Northeast the weather was colder and clearing, and high westerly winds prevailed north of Hatteras, N. C.

V.—The approach of this low area from the region north of western Montana was shown by the evening report of the 11th. The morning of the 12th it was central over Alberta, with pressure below 29.40, and at the evening report the center occupied northeastern Montana. On this date the 12-hour decrease of pressure was .40 to .60 from Alberta to the middle Missouri Valley, the 24-hour temperature rise was more than 30° from southern Assiniboia over western North Dakota. A "Chinook wind" was reported at Fort Assinaboine, Mont., until 6 p. m., when the temperature fell 30° in one hour. High south to southwest winds prevailed on the northwest coasts of Washington, and a wind velocity of 52 miles per hour from the northwest was reached at Fort Assinaboine, Mont.

Moving southeastward the center reached the lower Missouri valley the evening of the 13th, with pressure below 29.50. The 12-hour decrease of pressure was .20 to .30 from the Lake region to the west Gulf states, the 24-hour temperature rise was 20° to 30° from the middle-eastern slope of the Rocky Mountains over the Ohio Valley, the wind velocity exceeded 50 miles per hour from the southwest at Abilene and

Amarillo, Tex., with thunder and lightning at Abilene, and snow fell in areas in the Lake region. By the evening of the 14th the center reached the lower lake region, with pressure 29.30 at Buffalo, N. Y., a decrease of .36 in 12 hours. The 24-hour temperature rise was more than 20° from the eastern lake region to the south Atlantic coast, and an area of precipitation extended over all districts east of the Mississippi River. Moving east-northeast with a marked loss of strength the center disappeared over the Gulf of Saint Lawrence during the 15th.

VI.—The evening report of the 15th showed a low area over Alberta, with pressure 29.76 at Edmonton, a decrease of .50 in 12 hours. The 24-hour temperature rise at that station was 32°. The morning of the 16th an area of relatively low pressure extended from northeastern Montana over eastern Assiniboia, where the 12-hour decrease of pressure was .20 to .30, and the 24-hour temperature rise was more than 30°. By the evening of the 16th this area occupied southern Montana, with pressure below 30.10. The 12-hour decrease of pressure was .30 to .40 in the Red River of the North Valley, the 24-hour temperature rise was 20° to 30° from the middle Missouri valley to Manitoba, and snow set in during the day in the Red River Valley. Moving eastward as an ill-defined low area of slight energy this disturbance dissipated over the Lake region the night of the 17th.

During the night of the 18-19th and the morning of the 19th a short-lived low area advanced from the southeast slope of the Rocky Mountains to the Ohio Valley, where it dissipated. The passage of this area was attended with general rain in the central valleys, and thunderstorms and heavy rain on the southeast slope of the Rocky Mountains.

VII.—Apparently developed over the west Gulf states, and the evening of the 20th was central over the interior of the east Gulf states, with pressure below 30.00. On this date the pressure and temperature changes were small in the east Gulf states, rain fell generally in the Gulf States, and the rainfall was excessive at points in the east Gulf states. During the 21st the center passed off the south Atlantic coast. Rain fell along the middle Atlantic and Gulf coasts, and the rainfall was excessive in parts of the south Atlantic states. The pressure continued relatively low off the south Atlantic coast during the 22d, 23d, and 24th, with wind velocities of 50 to 60 miles per hour from the north on the North Carolina coast.

VIII.—During the 19th an area of low pressure appeared

over the north Pacific coast states and rain fell on the Pacific coast and over the middle and northern plateau regions. The pressure continued low, below 29.80, on the north Pacific coast during the 20th, and rain fell along the Pacific coast and over the middle plateau region. On the 21st the pressure fell below 29.70 on the north Pacific coast, the rain area extended from the Pacific coast north of the 40th parallel over the northern plateau region, and the wind reached a velocity of 60 miles per hour from the south at Fort Canby, Wash. The morning of the 22d the center had reached Assiniboia, with pressure below 29.90. The 12-hour decrease of pressure was .40 at Swift Current, the 24-hour temperature rise was 20° to 30° over southeast Alberta, southern Assiniboia, and northern Montana, and rain fell in areas from the north Pacific coast to the northeast slope of the Rocky Mountains. During the 23d this low area disappeared north of the Lake region. On this date fog was reported from the middle Missouri valley over the Lake region.

IX.—Apparently developed on the northeast slope of the Rocky Mountains during the 24th and 25th. The evening report of the 24th showed a 12-hour decrease of pressure of more than .30 over Alberta. On the 25th the 12-hour decrease of pressure was more than .10 over the eastern plateau and Rocky Mountain regions, and snow fell in Assiniboia. The evening report of the 26th locates the center over eastern Wyoming, with pressure below 29.90. The 12-hour decrease of pressure was .20 to .30 over the Dakotas, rain fell in areas over the east part of the plateau region, and snow in the Northwest. By the evening of the 27th the center had advanced to the southeast slope of the Rocky Mountains, its eastward advance being prevented by prevailing high pressure over the Lake region and east of the Mississippi River. Recurving to the east-northeast the center of disturbance reached the Ohio Valley the evening of the 28th, with pressure about 30.00. Rain fell generally east of the 100th meridian, followed in the Southwest by clearing weather. Moving eastward the center reached the Virginia coast by the evening report of the 29th, with pressure below 29.80. The 12-hour decrease of pressure was .20 to .30, and the 24-hour temperature rise was 10° to 20° in the Atlantic coast states north of the 35th meridian, rain fell from the Missouri Valley to the Atlantic coast, and wind velocities exceeding 30 miles per hour were noted from the Carolinas to the south New England coast.

Tabulated statement showing principal characteristics of areas of high and low pressure.

Barometer.	First observed.			Last observed.			Duration.	Velocity per hour.	Maximum pressure change in 12 hours, maximum temperature change in 24 hours, and maximum wind velocity.											
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.				Station.	Rise.	Date.	Station.	Fall.	Date.	Station.	Direction.	Miles per hour.	Date.		
High areas.		°	°	°	°	Days.	Miles.			Inch.			°							
I.....	2	38	100	36	83	2.0	22		Milwaukee, Wis.....	.36	2	Dodge City, Kans.....	24	1	Charlotte, N. C.....	n.	30	3		
II.....	2	46	118	38	78	4.0	28		Wilmington, N. C.....	.42	6	Saugeen, Ont.....	24	4	Kitty Hawk, N. C.....	n.	36	6		
III.....	6	53	104	52	93	1.0	19		Prince Albert, N. W. T.....	.34	6	Saint Vincent, Minn.....	26	6	Saint Vincent, Minn.....	n.	26	6		
IV.....	8	52	116	39	77	2.0	48		Calgary, N. W. T.....	.34	8	Duluth, Minn.....	28	9	Eureka, Cal.....	n.	32	8		
V.....	11	53	107	42	71	3.0	27		Sydney, C. B. I.....	.72	13	Huron, S. Dak.....	34	11	Bismarck, N. Dak.....	n.w.	36	17		
VI.....	11	37	103	30	80	2.0	35		Corpus Christi, Tex.....	.32	12	Corpus Christi, Tex.....	16	12	El Paso, Tex.....	n.w.	34	11		
VII.....	14	53	108	33	80	4.5	23		Erie, Pa.....	.84	15	Swift Current, N. W. T.....	52	13	Key West, Fla.....	n.e.	36	18		
VIII.....	16	54	116	48	66	4.0	26		Qu'Appelle, N. W. T.....	.38	17	Prince Albert, N. W. T.....	44	17	Huron, S. Dak.....	n.	36	17		
IX.....	22	48	125	48	61	6.0	26		White River, Ont.....	.74	26	Father Point, Quebec.....	48	27	Amarillo, Tex.....	n.	48	24		
X and Xa.....	27	53	107	51	87	2.5	15		Port Arthur, Ont.....	.30	29	Saint Vincent, Minn.....	36	28	Duluth, Minn.....	n.w.	28	26		
Mean.....							3.0	27		.48			33					34		
Low areas.										Fall.			Rise.							
I.....	1	43	93	42	69	2.0	28		Oswego, N. Y.....	.38	2	Nashville, Tenn.....	22	2	Buffalo, N. Y.....	sw.	42	2		
II.....	4	37	102	36	84	1.0	39		Cairo, Ill.....	.38	4	do.....	24	5	Hatteras, N. C.....	n.	50	5		
III.....	6	32	102	47	77	2.5	28		Grand Haven, Mich.....	.52	7	Northfield, Vt.....	36	8	Amarillo, Tex.....	sw.	60	6		
IV.....	9	54	115	49	68	3.5	36		Sydney, C. B. I.....	.84	13	Huron, S. Dak.....	42	10	Eastport, Me.....	n.e.	60	11		
V.....	12	52	113	46	71	3.0	38		Swift Current, N. W. T.....	.66	12	Northfield, Vt.....	50	15	Abilene, Tex.....	sw.	54	13		
VI.....	16	47	110	34	88	1.0	46		Edmonton, N. W. T.....	.50	15	White River, Ont.....	56	17	Saint Vincent, Minn.....	s.	40	16		
VII.....	20	32	89	34	75	1.5	24		Augusta, Ga.....	.16	21	Knoxville, Tenn.....	8	20	Hatteras, N. C.....	n.	60	22		
VIII.....	21	48	126	52	96	1.5	38		Swift Current, N. W. T.....	.40	22	Swift Current, N. W. T.....	32	22	Kitty Hawk, N. C.....	n.	60	22		
IX.....	26	44	104	37	75	3.0	32		Minneapolis, Minn.....	.38	26	do.....	34	27	Fort Canby, Wash.....	s.	60	21		
									Father Point, Quebec.....	.38	28	Saint Vincent, Minn.....	34	27	Sandy Hook, N. J.....	e.	40	29		
Mean.....							2.2	34		.47			34					52		